

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**21.07.1999 Bulletin 1999/29**

(51) Int Cl.6: **A61N 5/06**

(43) Date of publication A2:  
**23.12.1998 Bulletin 1998/52**

(21) Application number: **98304722.6**

(22) Date of filing: **15.06.1998**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU**  
**MC NL PT SE**  
 Designated Extension States:  
**AL LT LV MK RO SI**

(72) Inventors:  
 • **Christiansen, Kare**  
**2820 Gentofte (DK)**  
 • **Hansen, Hugin**  
**2970 Horsholm (DK)**

(30) Priority: **16.06.1997 DK 70397**  
**24.11.1997 GB 9724775**

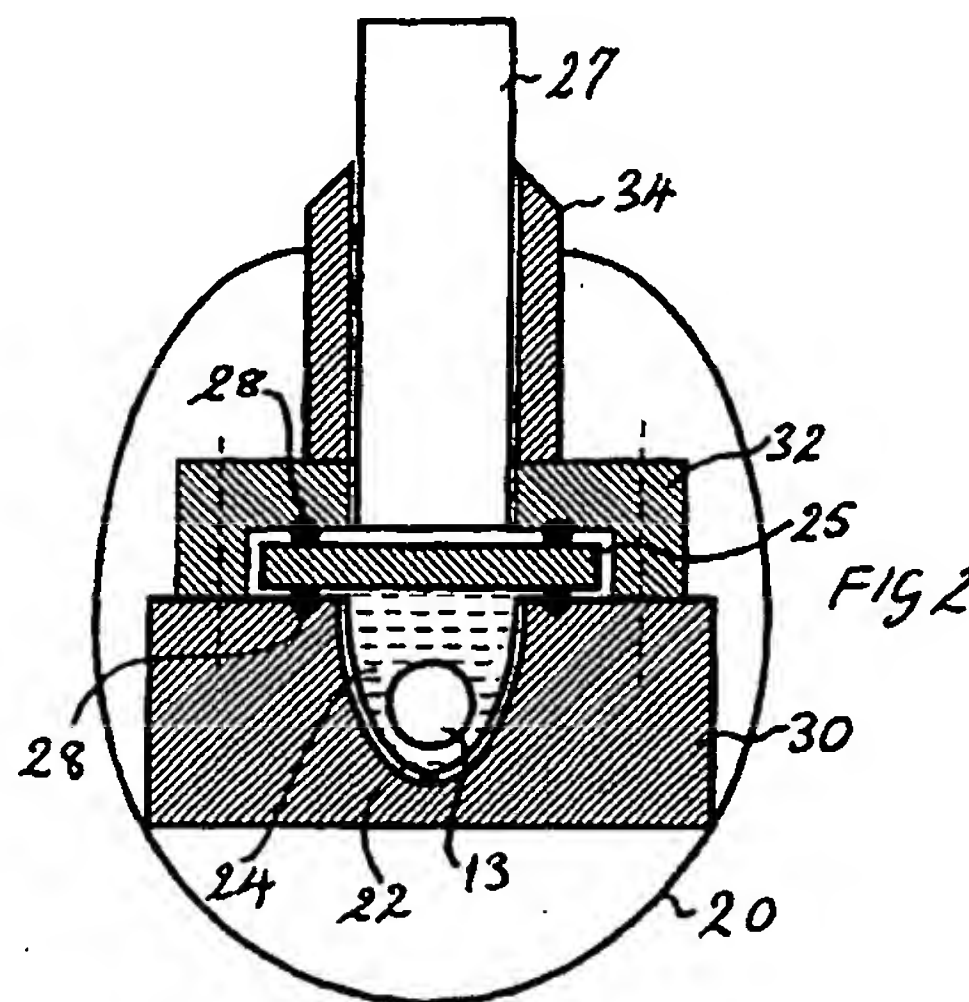
(74) Representative: **Smart, Peter John**  
**W.H. BECK, GREENER & CO**  
**7 Stone Buildings**  
**Lincoln's Inn**  
**London WC2A 3SZ (GB)**

(71) Applicant: **Danish Dermatologic Development**  
**A/S**  
**2970 Horsholm (DK)**

(54) **Light pulse generating apparatus and cosmetic and therapeutic phototreatment**

(57) Apparatus for therapeutic or cosmetic phototreatment comprises a flash lamp (13) and a lamp operating circuit. The lamp is cooled by water in contact with the lamp which acts as an infra-red filter to reduce skin burning. Light from the lamp reaches the skin through a light guide (27) which has a convex curved end to focus the light and to press away haemoglobin in the target area or has a concave end to reduce pres-

sure on the skin depending on the desired treatment. Relatively long and low power square shaped power pulses drive the lamp to produce light output pulses adapted to the relaxation time of the target structure to maximise the heating of the target whilst minimising heating of the skin surface. Target structures may be blood vessels or hair follicles. Automatic detection of a glass filter (25) may be provided.





European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 98 30 4722

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	DE 911 525 C (SEITZ) * the whole document *	6-9,27 1,2,4	A61N5/06
X Y	DE 692 907 C (LÖNNE) * the whole document *	6-9,27 1,2,4,27	
D,Y	EP 0 565 331 A (ESC) 13 October 1993 * abstract * * column 5, line 33 - line 51 *	1,2,4,27	
X	EP 0 485 864 A (MAXS) 20 May 1992 * abstract * * column 1, line 1 - line 11 * * column 3, line 37 - line 42 * * column 4, line 43 *	6,27	
A	* column 5, line 11 *	1,7	
X	DE 38 03 763 A (VUGHT) 17 August 1989 * column 1, line 12 - line 66 * * column 2, line 14 - line 48; claims 2,3 *	10,12,27	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A61N
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 May 1999	Examiner Taccoen, J-F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)



European Patent  
Office

Application Number  
EP 98 30 4722

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☒ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:  
10, 11, 12, 27
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



European Patent  
Office

LACK OF UNITY OF INVENTION  
SHEET B

Application Number  
EP 98 30 4722

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-9,27: Searched

Use of water as infra-red filter.

2. Claims: 10,11,27: Not searched

Light source including a light guide contacting the skin of a patient for photo-treatment, the light guide being shaped in a convex curve to reduce the amount of blood in the skin below the light guide.

3. Claims: 12,27:

Light source including a light guide contacting the skin of a patient for photo-treatment, the light guide being shaped in a concave manner to relieve pressure applied to the skin where blood is a target.

4. Claims: 13-17,27:

Apparatus producing a pulse of light during which light output pulse or pulse train lasts for at least 80% of the light output period

5. Claims: 18,27:

Apparatus comprising a filter adapted to pass only selected wavelengths comprising sensor means for detecting the presence and nature of said filter.

6. Claims: 19-26,27:

Apparatus for photo-treatment comprising a light source, said light source being adapted to produce a light flux of 250 J/cm<sup>2</sup> and said filter being a non-interference absorption filter.

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 30 4722

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-05-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 911525	C	NONE	
DE 692907	C	NONE	
EP 0565331	A	13-10-1993	
		IL 101547 A	05-12-1996
		US 5405368 A	11-04-1995
		CA 2093055 A	10-10-1993
		DE 9321497 U	20-08-1998
		FI 931608 A	10-10-1993
		US 5626631 A	06-05-1997
		US 5828803 A	27-10-1998
		US 5755751 A	26-05-1998
		US 5620478 A	15-04-1997
		US 5720772 A	24-02-1998
EP 0485864	A	20-05-1992	
		DE 9015721 U	12-03-1992
		AT 118364 T	15-03-1995
		DE 59104596 D	23-03-1995
		ES 2069175 T	01-05-1995
DE 3803763	A	17-08-1989	
		NONE	

EPO FORM P4459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82